99TH CONGRESS
1st Session
HOUSE OF REPRESENTATIVES
REPORT
99-99

AUTHORIZING APPROPRIATIONS TO THE OFFICE OF RESEARCH AND DEVELOPMENT, ENVIRONMENTAL PROTECTION AGENCY, FOR FISCAL YEAR 1986

MAY 15, 1985.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

---

Mr. FUQUA, from the Committee on Science and Technology, submitted the following

REPORT

[To accompany H.R. 2319]

[Including cost estimate of the Congressional Budget Office]

The Committee on Science and Technology, to whom was referred the bill (H.R. 2319) to authorize appropriations for environmental research, development and demonstration for the fiscal year 1986, and for other purposes, having considered the same, report favorably thereon and recommend that the bill do pass.

CONTENTS

		Page
I.	Purpose of the bill	1
II.	Committee actions	2
III.	Background and need for the legislation	2
IV.	Explanation of the bill	3
V.	Committee views	23
VI.	Cost and budget data	24
VII.	Oversight findings and recommendations	24
VIII.	Congressional Budget Act information	24
IX.	Congressional Budget Office cost estimate	25
X.	Oversight findings and recommendations, Committee on Government Operations	25
XI.	Effect of legislation on inflation	26
XII.	Changes in existing law made by the bill, as reported	26
XIII.	Committee recommendations	26

I. PURPOSE OF THE BILL

The purposes of the bill are:

51-006 O

H703-7

(1) To authorize appropriations for environmental research, development, and demonstration activities of the Environmental Protection Agency for fiscal year 1986;

(2) To expand the EPA's capability and emphasis in long-term environmental research; and

(3) To establish a research program on indoor air quality.

A summary of appropriation authorized in the bill by program medium is as follows:

EPA research and development authorization for fiscal year 1986

Air quality	$63,549,300
Water quality	28,102,300
Drinking water	23,271,600
Hazardous waste	47,408,400
Pesticides	11,993,100
Radiation	1,706,500
Interdisciplinary	24,139,900
Toxic substances	36,190,900
Energy	11,770,300
Acid rain	54,656,400
Superfund	13,132,000
Program management and support	8,840,300
Total	324,761,000

II. Committee Actions

The Subcommittee on Natural Resources, Agriculture Research and Environment held hearings on the fiscal year 1986 Environmental Protection Agency's (EPA) request for research and development on March 3 and March 19, 1985. In addition, the Subcommittee held a separate day of hearings, on April 3, 1985, on the budget request for agencies conducting research under the National Acid Precipitation Assessment Program, including the EPA.

In response to those hearings, a draft bill was prepared and presented to the Subcommittee for action on May 1, 1985. In that meeting, the Subcommittee ordered reported a clean bill to the Full Committee by a unanimous voice vote. The bill, H.R. 2319, was introduced on May 2, 1985 by Chairman Fuqua. H.R. 2319 was considered and ordered reported by the full Committee on Science and Technology on May 7, 1985, a quorum being present.

As ordered reported, H.R. 2319 authorizes $324,761,000 for fiscal year 1986 for the research programs of the EPA. The total funds authorized are equal to the President's fiscal year 1986 request, which is 6 percent, or $19,436,000 above fiscal year 1985 levels.

In addition to program authorizations, H.R. 2319 contains provisions establishing an indoor air pollution research program and requiring the Administrator to spend at least 15 percent of the funds authorized to be appropriated on long-range research. With some modifications, including a definition of "long-range research", these provisions are similar to those contained in H.R. 2899, the EPA research reauthorization bill for fiscal years 1984 and 1985 which passed the House in the 98th Congress.

III. Background and Need for the Legislation

The Committee on Science and Technology has adopted the practice of annual authorization of the Environmental Protection

Agency research program as a way of ensuring that the program is well managed and supportive of the Agency's primary role of protecting public health and welfare.

The bill authorizes program funds and provides program direction, as explained more fully in the following section of this Report, and directs the establishment of an indoor air research and long-range research program.

IV. Explanation of the Bill

INTRODUCTION

The paragraphs that follow provide a section-by-section description of the content and purpose of the bill. Table 1 provides a summary of all appropriations that are authorized by this bill.

TABLE 1.—EPA OFFICE OF RESEARCH AND DEVELOPMENT: SUMMARY OF AUTHORIZED APPROPRIATIONS

[In thousands of dollars]

Program (by medium)	Fiscal year 1984 appropriation	Current estimate fiscal year 1985 [1]	Fiscal year 1986 budget request	Fiscal year 1986 authorization	Fiscal year 1986 authorization versus fiscal year 1986 request	Bill section
Air	62,260	67,080	65,390	63,549	(1,841)	2(a)(1)
Water quality	24,790	[2] 27,320	28,199	28,102	(96)	2(a)(2)
Drinking water	23,798	24,668	23,925	23,272	(653)	2(a)(3)
Hazardous waste	32,302	41,084	49,562	47,408	(2,153)	2(a)(4)
Pesticides	6,295	10,225	12,282	11,993	(289)	2(a)(5)
Radiation	1,794	2,069	207	1,706	1,500	2(a)(6)
Interdisciplinary	20,872	26,338	18,748	24,140	5,392	2(a)(7)
Toxic substances	24,427	25,973	37,736	36,191	(1,545)	2(a)(8)
Energy	15,085	20,508	6,655	11,770	5,115	2(a)(9)
Acid rain	15,375	37,602	60,507	54,656	(5,850)	2(a)(9)
Superfund	8,781	12,734	13,132	13,132	(0)	2(a)(10)
Management/support	8,541	9,724	8,419	8,840	421	2(b)
Total	244,309	305,325	324,761	324,761	0	19,436

[1] Does not include 1985 recission request.
[2] Does not include $4,000 for comprehensive estaurine management being shifted to control and abatement.

The first column in Table 1 shows the appropriation for fiscal year 1984 while the second column indicates estimated spending in fiscal year 1985. Column three reflects the fiscal year 1986 budget request submitted by the President to the Congress. The fourth column represents the Committee's fiscal year 1986 recommendation while column five shows the difference between the fiscal year 1986 authorization and the President's request. The last column identifies the corresponding section of the bill that authorizes appropriations for each program for fiscal year 1986.

A section-by-section description of the bill along with a discussion of the Committee's actions and views follow:

SECTION 1

The bill is cited as the "Environmental Research, Development and Demonstration Authorization Act of 1985."

SECTION 2

Section 2 of the bill provides for authorization of appropriations for the research program catgegories. Except where otherwise noted, these are the program categories used by the EPA in developing its budget request.

The following paragraphs describe each of the research programs and the corresponding Committee action for fiscal year 1986. The discussions of individual programs is organized by the media identified in Table 1. There is a bried overview for each of the media followed by discussion of Committee actions.

SEC. 2(a)(1) AIR

Description of program

The Air Quality program supports the Clean Air Act (CAA). The role of research under the Act is two-fold: (1) to gather data on currently regulated air pollutants in order to review and revise air standards; and (2) to compile data on unregulated pollutants to determine whether potential health and environmental risks warrant further regulatory action. The program supports the agency's regulatory responsibilities for oxidants, hazardous air pollutants, mobile sources (cars and trucks) and gases and particulates.

Budget request

The total budget requested for this program for FY 1986 was $65,390,300 at 455 full time positions, a decrease of $1,690,000, or 2 percent, from fiscal year 1985 current estimate levels. A number of program changes were proposed in the budget. For all but environmental engineering and technology, salaries and expenses were reduced to reflect government-wide reductions to pay and administrative services. Research and development funds reflected the following changes: (1) the completion of the lead and the ozone criteria documents, and the initiation and completion of fewer hazardous air pollutants assessment documents; (2) the expansion of the Toxics Air Monitoring System and the visibility research program; (3) the completion of several ozone and carbon monoxide dose-response studies; (4) termination of research on indoor air; (5) reductions for environmental engineering and technical research; (6) completion of several studies to improve urban particulate models; and (7) completion of a major portion of the National Crop Loss Assessment Network (NCLAN).

Committee action

The Committee provided a total fiscal year 1986 authorization of $63,549,300 for this program, a decrease of $1,841,000 from the budget request and a decrease of $3,530,800, or 5 percent, from the fiscal year 1985 level.

The Committee has reduced funding from the budget request in order to restore funding to other important programs which would have been reduced or eliminated under the budget proposal. The reduction was determined by increasing the fiscal year 1986 request for salaries and expenses by 5 percent, thereby restoring the proposed 5 percent pay reduction, and reducing the fiscal year 1986

request for research and demonstration funding by 8 percent. In addition, the Committee restored $197,600 to the program.

The Committee believes that the Administration's proposed reductions for in-house research is unwise. Funding in the salaries and expenses appropriations account pays for more than salaries; it pays for all of the direct expenses of EPA's in-house research, including the purchases of laboratory equipment, building services, computer and data analysis support, and other laboratory supplies. High-quality research cannot be achieved or expected without the sophisticated tools needed to conduct such research. Nor can highly qualified research personnel be retained without adequate pay and support services. As a result, the Committee has increased the fiscal year 1986 budget requests for in-house research by increasing the salaries and expenses budget request by 5 percent. The Committee recognizes that this increase is only equivalent to a freeze at the fiscal year 1985 levels, and will continue to monitor the adequacy of the funding to ensure high-quality research.

The Committee has not indicated any intention to redirect activities within the program as a result of this overall reduction, leaving it to the discretion of the Administrator to determine which programs should be reduced.

SEC. 2(a)(2) WATER

Description of program

The Water Quality research program supports the Federal Water Pollution Control Act. It provides quality assurance to regional, state, local and industrial water quality programs and develop necessary data for establishing water quality standards and granting discharge permits. The water quality research program provides the knowledge and methods required to protect freshwater and marine environments and to implement the most cost-effective wastewater treatment technologies.

The program consists of three components—the Water Quality Program, the Municipal Wastewater Program, and the Industrial Wastewater Program.

Budget proposal

The total request for this program for fiscal year 1986 was $28,198,800 and 325 full time positions, an increase of $879,000, or 3 percent, above fiscal year 1985 levels. The budget request primarily reflected the following changes from fiscal year 1985: (1) reduction of salaries and expenses to reflect government-wide reductions to pay and administrative services; (2) a $1,323,800, or 53 percent, reduction in the Great Lakes Research Program, reflecting completion of the Fox River study and the development of the data base for open lake modeling; (3) increased research on the health risks of complex chemical mixtures in sludge; (4) increased research for developing predictive methods for treatability and distribution of toxics with sea water from industrial ocean discharges; (5) increased efforts to develop and standardize biological assays; and (6) a new effort to apply computerized "expert systems technology" to assist the permitting process.

Committee action

The Committee provides a total fiscal year 1986 authorization of $23,271,600 for the Water Quality Program, a reduction of $653,200 from the budget request and an overall incrase of $782,600 from the fiscal year 1985 levels.

The Committee increased in-house research funding for the program 5 percent over the fiscal year 1986 budget request, and reduced the extramural research funding by 8 percent in order to restore funds to other programs. With the exceptions noted below, the Committee has not redirected program activities within this category.

Great Lakes Research.—The Committee has provided that $2,171,500 of the funds authorized under this subsection shall be used on Great Lakes research, exclusively through the Great Lakes Research Station in Grosse Isle, Michigan. This level of funding is $1,000,000 higher than the President's budget request for Great Lakes research, although total funding remains $323,800 lower than fiscal year 1985 levels.

As the Committee has indicated in response to previous efforts to reduce funding for Great Lakes research, the Committee believes that the Great Lakes, as the largest surface body of freshwater in the world, are a unique and valuable resource and it places high priority on research necessary to ensure their preservation. The EPA Great Lakes Research station at Grosse Isle, Michigan, plays an important role in fulfilling the obligations of the United States as set forth in the Water Quality Agreement of 1978 ("the Agreement"), signed by the United States and Canada, to conduct research in assessing and measuring the sources, transport, fate and effects of pollutants in the Great Lakes.

The recent Biennial Report of the International Joint Commission has expressed concern about the funding of research under the Agreement, noting that:

> Uncertain levels of support, timing of awards and receipt of funds have affected the ability to keep essential levels of personnel in certain activities and have inhibited co-ordinated research programs. The result is an uncertain research climate and a diminished human scientific resource base for needed work. . . . There is also a sense that Agreement research needs have not been given adequate priority by federal and jurisdictional agencies.

The Committee encourages the Agency to meet these needs through expanded use of the resources at the Grosse Isle research station and directs the Agency to maintain at least the 8 work year level that was authorized in fiscal year 1985. Research performed with the funds should focus on pollution caused by toxic chemicals such as dioxin, PCBs, and furans, and on developing and implementing a management strategy for the control of pollution in the Great Lakes as set forth in the Agreement.

Aquatic weeds.—The Committee has also directed that $500,000 be expended on further study of environmentally sound ways to control aquatic weeds. While some study on this subject was conducted by the EPA in 1981 and 1982, little useful research results

have yet found their way into the hands of local, state and regional officials who must make decisions on controlling aquatic weeds. The Committee directs that the Agency continue to conduct research on this problem and to take steps to disseminate any research informaton in a usable and comprehensible manner to information users.

SEC. 2(a)(3) DRINKING WATER

Description of program

The drinking water research program is designed to provide information that will enhance the scientific and technical foundations underlying national drinking water regulations and standards (such as Maximum Contaminant Levels and Health Advisories) to protect groundwater quality pursuant to the Safe Drinking Water Act.

Budget proposal

The Administration requested a total of $23,924,800 and 192 work years for fiscal year 1986 research in drinking water, a decline of about 3 percent ($.7 million) from fiscal year 1985 levels. The budget request reflected the following changes from the fiscal year 1985 program: (1) Reductions for in-house research reflecting government-wide reductions in pay and administrative services; (2) an increase in technical assistance to regions and states for implementation of the Underground Injection Control regulations; (3) an increase in development and validation to toxicological extrapolation models for drinking water contaminants; and (4) a decrease in funding ($1.1 million) for Environmental Engineering and Technology, reflecting completion in 1985 of a cooperative research agreement with the American Water Works Association Research Foundation.

Committee action

The Committee provided a fiscal year 1986 authorization of $23,271,600, a decrease of $653,200 from the fiscal year 1986 budget request, and a $1,396,000, or 6 percent, reduction from fiscal year 1985 levels. The change from the budget request consists of a 5 percent addition for in-house research and a 8 percent reduction for extramural research in order to redirect funds to other programs.

The Committee believes that groundwater contamination is one of the most serious environmental threats faced by this Nation. As yet, our understanding of groundwater and the sources, movement, transformation, and fate of contaminants in groundwater, is rudimentary. The complex set of problems requires a strong agency-academic effort. The Committee, therefore, strongly urges the Agency to make better use of existing expertise on groundwater at the nation's universities. The Committee also believes that the relationship between EPA's Center of Excellence for Groundwater, and the Robert S. Kerr Environmental Research Laboratory in Ada, Oklahoma, represents a uniquely valuable human and scientific resource for the study of groundwater contamination issues and encourages the Administrator to make full use of these facilities and personnel.

While basic research belongs at the federal level, the very nature of groundwater contamination calls for close coordination and cooperation with state, local and regional organizations. The Committee believes that research which can help local and regional communities to identify potential sources of groundwater contamination and to manage those sources is valuable. In particular, the Committee intends that EPA continue to fund research, at the level of $500,000 for fiscal year 1986, for research on anthropogenic and geological impacts on groundwater in the Garber-Wellington aquifer, with the goal of developing a model plan that would be applicable for other communities in the nation.

SEC. 2(a) (4) HAZARDOUS WASTE

Description of program

The Resource Conservation and Recovery Act (RCRA) authorizes a regulatory program to identify those wastes which pose a substantial hazard to human health and the environment, and management standards sufficient to prevent exposure to those wastes. The research program supporting RCRA provides the scientific and engineering basis for characterizing wastes, and determining the hazards they pose, and develops the information needed for formulating controls to reduce human and environmental exposure. Section 311 of the Clean Water Act also mandates some of the research conducted in this program, specifically, the hazardous materials release activities. The program also provides for research in conjunction with private industry to develop the scientific data needed for preventing, controlling, cleaning up and disposing of released materials.

Budget proposal

The Administration requested a total funding of $49,561,700 and 241 work years for this program in fiscal year 1986, an increase of $8,478,000, or 21 percent. In part the large increase was justified by the EPA's expanded responsibilities under the 1984 RCRA amendments. The increases result primarily from the following program changes from the fiscal year 1985 program: (1) decreases in salaries and expenses as part of a government-wide reduction to pay and administrative services; (2) increases to develop new methods for subsurface monitoring of the unsaturated zone around land disposal facilities; (3) increases to evaluate alternatives to conventional means of disposing and destroying wastes; (4) additional funding of engineering and monitoring studies to support development of new regulations for installation, design and monitoring of underground storage tanks; (5) increased funding for evaluation of current practices for handling high volume mining wastes; (6) increases for dioxin risk assessments to include other isomers in addition to 2, 3, 7, 8 TCDD; (7) acceleration of development of bioassays into screening protocols for determining waste toxicity; and (8) increased funding for evaluating adequacy of existing criteria for regulating nonhazardous landfills.

Committee action

The Committee authorized a total fiscal year funding of $47,408,400 for this program, a decrease of $2,153,300 from the Administration's budget request, but an increase of $6,323,900, or 15 percent, from fiscal year 1985 levels. The Committee increased the fiscal year 1986 request for in-house research in this program by 5 percent, and reduced extramural research funds by 8 percent in order to redirect funds to other programs.

As discussed below with respect to the long-range research program established under Section 4 of the Act, the Committee believes that one of the highest priorities of this program ought to be the development and demonstration of innovative treatment technologies to treat, destroy, or detoxify hazardous wastes as an alternative to land disposal and deep well injection. The Committee intends that, in addition to making funds from the hazardous waste research program available for solicited extramural research contracts, funds shall also be available under the Interdisciplinary program for unsolicited grants and university research.

SEC. 2(a) (5) PESTICIDES

Description of program

Research on pesticides in direted toward fulfulling the current and future needs of the Agency to meet the provisions of the Federal Insecticide, Fungicide, and Rodenticide Act [FIRFA] and, to a limited extent, the Food, Drug and Cosmetic Act [FIFRA]. The research program largely addresses the issue of risk assessment and risk management of pesticides by assisting in the development of scientifically valid and cost-effective evaluations of the risks of pesticides.

Budget proposal

The budget request for fiscal year 1986 proposed a $2,057,000 (20 percent) increase in total funding to $12,282,200 and 110 work years. The budget request reflected the following changes from the fiscal year 1985 program: (1) reductions to salaries and expenses reflecting government-wide reductions to pay and administrative services; (2) increase in funds for health effects assessment menthods; (3) a decrease in funds resulting from the completion of the initial phase of the Total Exposure Assessment Methodology (TEAM) program; (4) a decrease in funding for health effects research; (5) increased funds on research for protective clothing; and (6) increased funds for environmental processes and effects research, for the development of a new modeling system for integrating exposure and effects data to define environmental risk associated with pesticide use, and for research on a new class of bioengineered pesticides.

Committee action

The Committee authorized for fiscal year 1986 a total of 1,933,100 for activities under the pesticide research program, a decrease of $289,100 from the budget request, but an increase of $1,768,200, or 17 percent, over fiscal year 1985 levels. The Committee increased

the budget request for in-house research by 5 percent and decreased the budget request for extramural research funds by 8 percent in order to redirect funds to other programs.

The Committee is particularly concerned with the adequacy of research in the pesticides program with respect to predicting the environmental effects of a deliberate release of genetically engineered organisms into the environment for the purposes of pest or weed control. The Administrator should direct additional funds into this program. To ensure adequate funding levels of research in this area, the Committee intends to continue its oversight of this activity and other research activities involving risk assessment of bioengineered products.

SEC. 2(a)(6) RADIATION

Description of program

EPA's authorities for radiation, derived from several sources, require the Administrator to advise the President on matters involving radiation which affect health, including guidance for all Federal agencies in the formulation of radiation standards and in the establishment and execution of programs of cooperation with the states. ORD's radiation program provides the Office of Radiation Programs and other EPA, Federal, regional, state and local officials with scientifically credible data, methodologies, and assessments required to determine public exposure to non-ionizing radiation and radioactive materials in the environment, and to control such exposure.

Budget proposal

The budget request for fiscal year 1986 proposed eliminating the health effects portion of the program, which has traditionally been the largest component of the program. Total proposed funding was $206,500, a decrease of $1,862,000 from fiscal year 1985. Total work years would have declined from 22 to 5. Without a health effects program, radiation research would have been limited to providing monitoring for DOE nuclear test sites and quality assurance support for various labs. The Administration claimed that the $2 million health effects program was no longer needed since data now available would have provided a sufficient data base for establishing exposure guidelines for extremely low frequencies of non-ionizing radiation.

The EPA health effects research program represents the largest intramural effort in the field of non-ionizing radiation in the United States. Research focuses on radiofrequency and microwave radiation in the range of 300 to 300,000 megahertz. Such frequencies are most prevalent in the environment and are emitted from a variety of sources such as radar systems, microwave ovens, video display terminals, radios, televisions and other communication devices.

The health effects program is designed to provide EPA and other concerned agencies with an understanding of the biological and health consequences of exposure to non-ionizing radiation. In September, 1984, the Health Effects Research Laboratory released a detailed report entitled "Biological Effects of Radiofrequency Radi-

ation." EPA's Science Advisory Board (SAB) called the report a "splendid job" and urged the EPA Administrator to "continue and strengthen its program of extramural research, and also its in-house research on the health effects of radiofrequency radiation, not only to keep abreast of the field . . . but also because the research itself is invaluable to the nation, as attested by the fact that a considerable part of the scientific results reported in the present review derives from work done at EPA's own laboratories."

Committee action

The Committee authorized a total fiscal year 1986 budget of $1,706,500 for radiation research programs, a $1,500,000 increase from the budget request, and a $362,300 decrease from fiscal year 1985 levels. The Committee has directed that the additional $1,500,000 be spent on research on biological and health effects of non-ionizing radiation at the Health Effects Research Laboratory at Research Triangle Park, North Carolina.

The Committee finds that the proposed termination of the non-ionizing radiation health effects research program is totally unwarranted. Public concern about the health risks associated with exposure to sources of non-ionizing radiation is growing. Yet may facets on non-ionizing radiation health effects remain largely unexplored. The SAB noted numerous areas for further research, including the effects of chronic versus acute exposures and the effects of exposures from extremely low frequency (ELF) radiation, including 60-Hz electric and magnetic fields from high voltage power lines. Recent animal studies and expidemiological data suggest that long-term exposure to radiofrequency/microwave radiation may be linked to cancers, brain damage, and changes in spinal fluid. Further, while the Administration justifies terminating the health effects research effort because sufficient data is available on which to determine exposure guidelines, EPA's decision last year to withdraw proposed guidelines for broadcast frequencies, only shortly before such guidelines were to be published, certainly suggests continued uncertainty.

The Committee believes that the EPA's non-ionizing radiation health effects research program at Research Triangle Park is a unique resource which should be maintained. The Committee has, therefore, directed the Agency to continue to conduct research through this laboratory.

SEC. 2(a) (7) INTERDISCIPLINARY

Description of program

The Interdisciplinary program contains four programs which cut across the traditional media lines around which the Agency is organized. They are: (1) Exploratory Research, including a peer-reviewed, unsolicited grants program and the EPA's Centers of Excellence program, the Visiting Scientists program, the Mussel Watch and Specimen Bank programs; (2) Integrated Risk Assessment, which performs cross-cutting risk assessment methodologies and supports the intra-agency Risk Assessment Forum; (3) the Technical Information and Liaison program, which provides information

and technology transfer to state and local officials; and (4) the agency-wide Quality Assurance Program.

Budget proposal

The fiscal year 1986 budget request for this program was $18,747,500, a reduction of $7,590,000, or 29 percent, from fiscal year 1985 levels. In addition to reductions to salaries and expenses stemming from the proposed government-wide reductions to pay and administrative services, the budget request proposed reductions of $7,363,500 (or 35 percent) in the Exploratory Research Core program, in particular, the grants program and the Centers of Excellence program. Under the proposal research grants would be significantly reduced and the Centers of Excellence would be limited. Other changes in the Interdisciplinary program included (1) a 14 percent increase in risk assessment funding; and (2) decreases in the agency-wide quality assurance program, and the technical information and liaison program.

Committee action

The Committee authorized total funding of $24,139,900 for this program in fiscal year 1986, a decrease of $2,197,700 from fiscal year 1985 levels, but an increase of $5,392,400 over the Administration's request. The Committee increased the in-house research request by 5 percent, and added $5,200,000 exclusively for the grants and Centers of Excellence program.

The Committee continues to be concerned about the commitment of the Agency and the Administration to long-range environmental research at the Environmental Protection Agency. The Administration's budget request, like many of those in the past, seeks to reduce long-term research in order to increase research funds available to meet pressing regulatory needs. This Committee, along with the National Academy of Sciences and the Office of Technology Assessment, has long expressed its view that EPA cannot efficiently and rationally address its short-term environmental problems without undertaking research of a long-term nature that builds fundamental knowledge necessary for meeting those needs. A recent Council on Environmental Quality report, "Report on Long-Term Environmental Research and Development," further underscores the Committee's concern by listing some of the major gaps in the existing scientific knowledge base which hinder regulatory decisionmaking.

The Committee has also expressed its view in the past that the Agency should develop continuous sources of highly trained and dedicated professionals, with expertise needed to upgrade all the research programs of the Agency. Institutions which are assisted should be involved in the kinds of long-range research that are essential to support the activities of the Agency research program. The Committee intends that these programs be of the highest quality and relevant to the Agency's mission. For that reason, there should be a peer review process for the award and evaluation of grants or block grants that is open and fair.

With respect to the Centers of Excellence program, the Committee believes that the Centers concept remains a promising and viable one. It is clear, however, that funding for the Centers has

remained below the level anticipated when the Centers were established and that funding uncertainties have reduced the ability of the Centers to be a productive part of EPA's long-range research program. The Committee has restored funding to this program to ensure that the core funding for each Center remains sufficient to maintain a high quality program. It is hoped that the Agency will also respond to the recommendations contained in the recent SAB report on the Centers program. The Committee is aware that the Centers program will be reviewed by the Agency this fiscal year and intends to oversee this process closely.

SEC. 2(a)(8) TOXIC SUBSTANCES

Progam description

EPA research on toxic substances is directed toward fulfilling the current and future needs of the Agency to meet the testing requirements and hazard assessments required by the Toxic Substances Control Act [TSCA]. The research issues primarily focus on assessing the risks of existing and new chemicals in a scientifically valid yet cost-effective way. Techniques are developed for predicting transport, transformation, exposure concentration and adverse effects on human health and the environment.

Budget proposal

The budget request for fiscal year 1986 reflected a 45 percent ($11.7 million) increase in total dollars, for a total of $37,736,100 and 200 work years. Toxic substances was the fourth largest component of the research program under the budget request. The budget request reflected the following changes from the fiscal year 1985 levels: (1) reductions in salaries and expenses reflecting government-wide reductions to pay and administrative services; (2) increases in health effects ($3.9 million, up 36 percent) and in environmental processes and effects (up $3.7 million, 42.4 percent); (3) increases of $3.8 million to address several biotechnology issues, including assessments of potential environmental contamination from genetically-engineered organisms, assessments of physical, chemical and biological techniques and devices to contain and destroy engineered organisms, and development of methodology for assessing potential health and genetic hazards of viral bacterial agents used in the biotechnology field; (4) increased research in the area of biochemical indicators of exposure; and (5) increased efforts to predict toxicity from studies of molecular structure.

Committee action

The Committee authorized a total fiscal year 1986 funding of $36,190,900 for this program, a decrease of $1,545,200 from the budget request, but an increase of $10,217,700 from fiscal year 1985 levels. The Committee increased the in-house research request for this program by 5 percent, and decreased extramural research funds by 8 percent in order to restore funding to other program areas. The Committee endorses the Administrations' request for substantially increased funds in this area.

SEC. 2(a)(9) ENERGY ACTIVITIES

Description of program

The EPA's Energy research activities include a large program on acid rain research. Part of the Multimedia Energy budget (for historical reasons), EPA's acid deposition research program is coordinated with the National Acid Precipitation Assessment Program [NAPAP] established under the Acid Precipitation Act of 1980. In the fiscal year 1986 budget request, the EPA's share of the federal acid precipitation research effort would have climbed to 71 percent. The focus of the EPA program is to investigate the causes, effects, and methods of mitigating or controlling acid deposition.

The remaining portion of EPA's energy research program is intended to provide health and environmental effects information on the consequences of energy extraction, processing, combustion, and disposal of materials, as well as research and demonstration for control technology, particularly with respect to conventional combustion. The program has declined significantly over the last five years, now involving the assessment of the environmental and health effects of synfuels development, the demonstration of the limestone injection multistage burner [LIMB], and an assessment of the impacts of energy development in cold climates.

Budget proposal

The fiscal year 1986 budget request proposed increased funding for the acid precipitation research program by $22,905,000, a 61 percent increase, for a total of $60,507,000 and 60 work years. Approximately $8,000,000 was earmarked to be passed through to other agencies doing research under the NAPAP program. The fiscal year acid precipitation research budget request accounted for nearly one-fifth of the agency's total R&D budget and was second only to the Air Quality research program in size. The increased funds were slated to support new or expanded research in the following areas: (1) $3,000,000 to the aquatic effects program to address the "direct or delayed" response question; (2) $11,500,000 to the terrestrial effects program to establish better the extent and severity of forest declines in the U.S.: (3) $1,500,000 to set up cloud monitoring stations to help determine chemistry and deposition in high elevation forests; (4) $3,000,000 for a controlled atmospheric field study; (5) $2,000,000 to establish fifty dry deposition monitoring stations; (6) $1,000,000 for accelerating the 1985 emission inventory; and (7) $1,000,000 to the terrestrial effects program for intensive study of two watersheds.

The fiscal year 1986 budget request for the non-acid rain portion of the energy research program included a reduction of $13,900,000, a 68 percent reduction from fiscal year 1985 levels, for a total of $6,655,000 and 38 work years. The major reductions were in the following areas: (1) reductions to salaries and expenses reflecting government-wide reductions to pay and administrative expenses; (2) reduction of $1,300,000 from the synfuels health effects program, which would be ended; and (3) reduction of $12,100,000 from the limestone injection multistage burner (LIMB) demonstration program, precluding the full-scale demonstration of a tangentially-fired LIMB. Other LIMB research would continue.

Committee action

The Committee authorized for fiscal year 1986 total funding of $66,426,700. The authorization is distributed as follows:

Acid rain research.—The Committee has directed that $54,656,400 be authorized for acid rain research, a reduction of $5,850,300 from the Administration's budget request, but an increase of $17,054,000 over fiscal year 1985 levels. The Committee increased the in-house research portion of the fiscal year 1986 budget by 5 percent, and reduced extramural research by $6,000,000.

While the Committee believes that acid rain research is a high priority and supports increased funding for the program, the Committee has reduced the fiscal year 1986 budget request for several reasons.

First, the Committee is concerned about the Agency's ability to manage the rapid growth in this program, which has increased from $6,900,000 in fiscal year 1981 to the proposed level of $60,500,000 in fiscal year 1986. The Committee is also concerned about the impact of such growth on other aspects of EPA research efforts, particularly at a time when other important research programs have suffered significantly reduced levels of funding. The acid rain research budget has grown from approximately 2 percent of EPA's total research budget in fiscal year 1981 to 19% in the budget request for fiscal year 1986.

Second, the Committee is concerned about the trend evident in the budget proposal for the EPA to shoulder an increasing proportion of the federal acid rain research effort. In fiscal years 1982 to 1985, EPA's share of the acid rain research program was essentially level, at a little over 50 percent. In the fiscal year 1986 budget proposal, however, EPA's share would have increased to 71 percent. Virtually all of the increase in the total federal acid rain research budget would have been funded solely by the EPA. In addition, the Committee is concerned about the practice of passing through funds to other agencies which are apparently unwilling to include sufficient funds for acid rain research in their budget requests. The fiscal year 1986 budget request, for example, envisions EPA passing through $5,000,000 to the Forest Service for research on forest effects. The pass-through procedure adds uncertainty, involves additional costs, and distorts the EPA budget process. The Committee believes that it is the responsibility of agencies conducting research under the program to seek sufficient funds to sustain their respective research roles.

In addition, the Committee is concerned about the balance between basic acid rain research and acid rain control technology research, which is funded in the other portion of the Energy budget. Funding for energy environmental engineering and technology, which is intended to develop and demonstrate control technologies to reduce precursors of acid rain, has declined from $18,800,000 in fiscal year 1981, when such activities represented 5 percent of the EPA's research budget, to $6,300,000 in the fiscal year 1986 budget request. The Committee believes that the EPA should continue to demonstrate promising technologies which may be of benefit in reducing acid rain precursors at a reasonable cost if and when acid

rain controls are implemented. As discussed below, the Committee has redirected $5,000,000 for further acid rain control technology research and demonstration.

Other energy.—The Committee authorized a total of $11,770,300 for other energy activities research for fiscal year 1986, an increase of $5,115,200 over the budget request and a decrease of $8,738,100 from fiscal year 1985 levels. The authorization reflects a 5 percent increase over the budget request for in-house research and an additional $5,000,000 for the demonstration of a full-scale tangentially-fired LIMB.

LIMB is a promising technology for reduction of acid rain precursors. Unlike most control technologies, LIMB offers the ability to reduce nitrogen oxide emissions as well as sulfur dioxide emissions. Recent evidence suggests that nitrogen oxides may play a significant role in acid rain in the western United States, as well as in damage to forest eco-systems.

EPA is currently co-sponsoring a 115 megawatt demonstration LIMB project on a wall-fired boiler. Because of fundamental design differences between wall-fired and tangential-fired boilers, however, the current demonstration will be of little value in determining whether the LIMB technology will provide an effective and relatively inexpensive way to reduce acid rain precursors on tangential-fired boilers. Funds requested for fiscal year 1986 are inadequate to support a full-scale demonstration project for a tangential boiler, a design which constitutes 57 percent of the utility capacity believed by the Electric Power Research Institute (EPRI) to be suitable for LIMB retrofit. The Committee does not believe, given the current regulatory and market uncertainties surrounding the acid rain control issue, that sufficient incentives exist for the private sector to invest adequate resources in developing and demonstrating the LIMB technology.

The additional funding provided by the Committee is intended exclusively for the first year's funding of the development and demonstration of a full-scale tangentially-fired LIMB. Estimates of the total cost of such demonstration range from $15–$20 million, and the Committee envisions the demonstration proceeding with outside parties paying at least 50 percent of the total for demonstration costs.

SEC. 2(a) (10) SUPERFUND

Description of program

Superfund research and development activities are designed to support the Office of Emergency and Remedial Response, Regional Offices, States and industry by resolving those problems which inhibit the effective and efficient implementation of removal and remedial actions. Superfund research and development activities are designed to meet the short-term objectives of (1) providing the necessary tools and methods for sampling analyses, laboratory analyses, quality assurance and remote monitoring to discover and characterize hazardous wastes from removal and remedial actions; (2) providing the necessary tools to field response personnel to determine the potential ecological effects of hazardous substance spills and releases from uncontrolled hazardous waste sites; (3) providing

evaluations of the hazardous potential from substances released from spills and uncontrolled waste sites; and (4) providing engineering guidance to Federal, State and local officials in the immediate response to spills of hazardous substances; field evaluations of equipment and technologies for onsite treatment and destruction of hazardous wastes, leachates and contaminated groundwater; evaluating and assessing the most cost-effective technologies for performing remedial actions at uncontrolled sites.

Budget proposal

The fiscal year 1986 budget request proposed a modest 3 percent increase ($400,000) for a total of $13,132,000. The program would continue largely unchanged, with the increase going to additional site support.

Committee action

The Committee endorsed the President's request for this program.

SEC. 2(b) PROGRAM MANAGEMENT AND SUPPORT

General description

This activity provides for centralized program direction, management and other services for the Agency's research and development activities. It also includes the pro rata share of agencywide support costs which are allocated to the Research and Development appropriation as well as support costs which are incurred at the Office of Research and Development's laboratories and charged directly to this appropriation.

The program management activities associated with the Agency's research and development program include the overall direction and centralized management of the Office of Research and Development. It covers the salaries and other expenses of the Assistant Administrator for Research and Development and his principal deputies, their immediate staff groups, which assist them.

Program support covers the overhead services needed to support the research and development effort. Two types of support costs are included. The first consists of the share of the cost of agencywide support services which are prorated to the Research and Development Appropriation. These costs include common services provided to programs located in Washington, D.C.; Research Triangle Park, North Carolina, and Cincinnati, Ohio; as well as certain agencywide charges such as facilities leases costs, communications and centralized ADP services. The second type of cost includes support services which are directly incurred in connection with the operation of the Office of Research and Development's laboratories. These direct costs consist mainly of laboratory and office services, utilities, building maintenance and similar "housekeeping" costs at research and development installations other than those located at Research Triangle Park and Cincinnati.

Budget proposal

The Agency requested $8,419,300 for Management and Support for fiscal year 1986, a decrease of $1,305,000, or 13 percent. The re-

ductions stem from government-wide reductions to pay and administrative services.

Committee action

The Committee authorized fiscal year 1986 funding at $8,840,300, an increase of $421,000 over the Agency's budget request, and a decrease of $883,700 from fiscal year 1985 levels. The Committee increased the Agency's budget request by 5 percent.

The Committee encourages the Agency to consider, where appropriate, the specific recommendations of the President's Private Sector Survey on Cost Control (the "Grace Commission") with respect to cost savings that can be achieved by eliminating duplicative literature searches and conducting more cooperative agreements in-house.

SEC. 2(C) INDOOR AIR QUALITY

Section 2(c) authorizes $3,000,000 from the funds authorized in subsection (a) for fiscal year 1986 to carry out the indoor air quality research program provisions set out in Section 4 of the Act. The Committee intends by this subsection to grant the Administrator the discretion to reprogram funds from any of the programs authorized in subsection (a) to meet the obligations of the provisions of Section 4.

SEC. 2(d)

Section 2(d) authorizes the Administrator to provide payment for peer review of grant and cooperative agreement applications and contract proposals between the Agency and individuals, universities, and other research institutions. This section applies not only to fiscal year 1986 but to subsequent years as well.

SEC. 2(e)

Section 2(e) provides the Administrator with the authority to transfer funds authorized under this Act only between program categories listed in sections 2(a) and (b). However, such transfers, when in excess of 10 percent of the funds authorized for particular research categories, are prohibited without first notifying and seeking approval from appropriate committees of the House and Senate. This provision will greatly enhance the ability of the Committee to oversee shifts in program emphasis.

SEC. 2(f)

Section 2(f) prohibits the use of any funds authorized to be appropriated under this Act for any payment for a reduction-in-force or to close any field station, regional office, laboratory, or other research center, in any fiscal year, unless the Agency provides 30 days notice to the appropriate legislative and appropriations committees of the House and Senate of the reasons for the action and the impact of such action on the ability of the Agency to carry out the provisions of this Act.

The Committee took this action to ensure that adequate facilities, manpower, and resources exist in the Agency to carry out the

program authorized and provisions contained in this Act. The Committee recognizes that reorganizations of resources and shifts in personnel may be required in response to budget constraints and other management needs. The Committee, however, is particularly concerned about the possible reorganization of EPA's research laboratory structure, which may not fully take into account the benefits of geographical location near the resources being studied or the value of the capital represented by experienced and established scientific research groups. This section will enable the Committee to exercise its oversight responsibilities with respect to such management actions more effectively, to ensure that such actions do not jeopardize the ability of the Agency to carry out its duties under this Act.

SEC. 2(g)

Section 2(g) specifies that appropriations made pursuant to the authority provided by this Act may be obligated and expended by the Agency for such periods as may be allowed in Acts making such appropriations.

SEC. 2(h)

Section 2(h) prohibits the use of funds appropriated pursuant to this Act for activities other than those authorized by this Act. This section is intended to preserve a stable funding base for EPA research and development activities by prohibiting the use of research funds to make up for short-falls or to fund new intiatives in other EPA programs. It is the Committee's intent that such short-falls or new initiatives should be funded by other means, such as through supplemental appropriations, and not be depleting research funds which would jeopardize the Agency's ability to comply with the provisions of this Act.

SEC. 3. LONG-TERM RESEARCH

As discussed previously under the Interdisciplinary activities section, the Committee places a high priority on long-term research. Long-term research is an essential adjunct to rational and cost-effective environmental regulation. The failure to invest in long-range research has left major scientific uncertainties unresolved which render regulatory decisionmaking highly speculative. Major scientific uncertainties continue to abound in areas such as risk assessment methodologies, groundwater behavior, the transformation of pollutants in the environment, cross-media transport of contaminants, health effects, background or "natural" levels of pollutants, long-term resource trends, synergistic effects of toxic substances, and environmental effects in complex eco-systems. Such uncertainties have made regulatory decisions difficult with respect to issues such as groundwater contamination, acid rain, risk management of toxic substances, pesticide use, and biotechnology regulation, among others.

Section 3(c) therefore directs the Administrator to obligate and expend at least 15 percent of the funds of the funds authorized under section 2(a) of the Act on a long-range environmental re-

search and development program. This authorization is for in-house peer-reviewed research, extramural grants for peer-reviewed research, cooperative agreements with or block grants to universities or similar research institutions, and the Exploratory Core research program. The total appropriation provided for in the Interdisciplinary program pursuant to the authorization set forth in section 2(a)(7) of this Act shall be used for these programs.

To provide further program direction in this area, the Committee has defined "long-range research" in section 3(c)(2). The Committee intends that only research which meets the definition can be designated as long-range research for the purposes of meeting the 15 percent requirement. To qualify, research must be required for a period of at least two years and either (1) improve understanding of the physical, chemical, or biological processes involved in the transportation, transformation, fate or effects of substances in the environment, or (2) improve the ability to identify emerging environmental problems at an early stage.

The Committee has identified several priority areas for research under this section. Research which can assist regulators in predicting the environmental effects of a deliberate release of genetically-engineered organisms into the environment is critically needed. Most experts believe that the products of biotechnology, including genetically-engineered organisms, are rapidly approaching the point of commercialization. EPA has already indicated its intent to regulate these products under TSCA and FIFRA. The Committee is concerned, however, that the major uncertainties concerning the likely environmental fate and effects of such products will hinder regulatory decisionmaking.

Similarly, major gaps in scientific knowledge about groundwater and groundwater contamination, including a dearth of tools for making critical measurements, are adversely affecting decision-making with respect to drinking water, hazardous waste clean-ups, pesticide use, and toxic substances regulations.

The Committee also intends this program to support the research, development and demonstration of hazardous waste treatment technologies. In recent years, the United States has faced the problem of numerous sites that suffer from contamination by a number of hazardous substances, most notably furans, dioxin, and polychlorinated biphenyls. Since then, despite intense interest on the past of this Committee, we still cannot point to effective, cost-effective treatments that will rid the environment of these hazards to human health.

In this program, the Committee establishes a program of research which is designed to focus the EPA's attention on future problems the country will face. The Agency is directed to expand its efforts on research, development and demonstration of new technologies that will reduce the need for disposal of dioxin or other hazardous materials on land or in deep wells. The focus of this program should be on the development of methods for treatment, destruction or detoxification of wastes in place. The Committee intends that the Agency should concentrate on providing the public with permanent protection from the release of such substances, rather than continue to seek less satisfactory means for storage or isolation.

The Committee does not intend to relieve the Agency of its continuing efforts to seek needed information at contaminated sites. Specifically, the Committee has repeatedly expressed its concern with the lack of basic research into the life cycle of hazardous wastes in the environment. This includes, but is not limited to, properties, half-life and transport mechanisms. If effective methods of treatment in situ as envisioned in the long-range research program are to be developed, such information will be vital. The Committee encourages the Agency to seek outside assistance in carrying out this program from universities or state and local agencies that show demonstrated expertise in these areas.

The Committee also directs that funds under the long-range program be expended on long-term ambient monitoring to determine significant trends in environmental quality. The Committee continues to express concern about the lack of a comprehensive and coordinated environmental monitoring program within EPA and among other international, federal, regional, and state agencies. The lack of basic monitoring data frustrates sound environmental planning and prevents an assessment of the operation of environmental laws and regulations.

The Committee also directs that funds under this long-range research program be expended on research to improve and validate risk assessment methodologies. While the Committee in general supports the use of risk assessment, its utility could be greatly improved by research which reduces some of the major scientific uncertainties underlying commonly used methodologies.

The Committee intends that the research funded through the programs authorized under this section be of the highest scientific quality and relevant to the Agency's mission, whether directly or indirectly, and be performed both on an in-house and extramural basis. The results of the research conducted under this program should be widely disseminated to those who would benefit therefrom.

Section 3(d) requires the Administrator to prepare and submit to Congress, at the time the President's budget request for fiscal year 1987 is likewise submitted, a report on the performance of the programs authorized under this section. This requirement is imposed by the Committee in order to help the Committee in evaluating program performance and to ensure that the Agency complies with the provisions set forth in this section.

Finally, the Committee continues to be concerned about the lack of integration of the long-range research program with the Agency's operating programs, and the failure of the research planning process to affect the budget process. In prior authorization bills, the Committee has attempted to enhance the long-range research planning process by requiring the Administrator to prepare an annual 5-year strategic research plan. The Science Advisory Board has annually criticized the reports as inadequate, terming the most recent version "bankrupt of new ideas, innovation, and a forward look." The Science Advisory Board, the Administrator, and the Office of Management and Budget have recommended the reporting requirement be repealed.

Section 3(a) repeals the statutory reporting requirement contained in section 5 of the Environmental Research, Development

and Demonstration Authorization Act of 1976 (Public Law 94-475), as amended by section 4 of the Environmental Research, Development and Demonstration Authorization Act of 1978 (Public Law 95-155). However, the Committee plans to consider ways in which long-range research planning at EPA can be improved. To further this process, section 3(b) directs the Administrator to make recommendations to Congress within 180 days for legislative action to improve the long-range planning process.

SEC. 4. INDOOR AIR QUALITY

As the Committee has indicated in the past, indoor exposures to pollutants and toxic substances may be more significant than outdoor exposures. Recent scientific reports, including those conducted by EPA, confirm that many hazardous pollutants exist in indoor environments at much higher levels than in the outdoor environment. Given that most of the population spends between 70 and 90 percent of their time indoors, it is evident that any integrated research program to investigate the health effects of airborne hazardous substances must include indoor exposures.

The Committee is therefore extremely disappointed that, despite continued expressions of concern by various Congressional committees, the Agency failed to request funds for indoor air quality research for fiscal year 1986. Section 4 of the Act directs the Administrator to establish an indoor air quality research program at EPA. Section 4(d)(1) directs the Administrator to submit to Congress, within 90 days, a research plan, which shall be independently reviewed by EPA's Science Advisory Board. In addition, within two years, the Administrator shall, in consultation with other Federal agencies, submit a report to Congress assessing the state of knowledge concerning the health risks posed by indoor air contamination, the need for further research, and the potential effectiveness of possible Federal Government actions to mitigate environmental and health risks.

The Committee emphasizes that the Act does not establish or authorize a new regulatory program at EPA. Indeed, it is the expectation of the Committee that many of the problems caused by indoor air polution can be mitigated by action by individual homeowners, the building industry, and local communities. Nevertheless, such actions require a federal research base since neither local communities nor the private sector have the resources or the incentive to conduct such research. It is the sense of the Committee that the Administrator should therefore give particular emphasis to public information outreach activities to ensure that the results of the research program established by this section are widely disseminated.

The Committee also recognizes that other federal agencies including the Department of Energy, the Department of Health and Human Services, and the Consumer Product Safety Commission, have on-going programs in the indoor air quality area, and have worked cooperatively with the EPA in the past. It is the Committee's intent that EPA's research program continue to be part of a coordinated and cooperative research program with these and other agencies. In particular, the Committee believes that the interagency Committee on Indoor Air Quality has been an effective

vehicle for coordination of research efforts in this area and that the EPA program should continue to be coordianted through the Committee.

It is the sense of the Committee that, of the hazardous substances in the indoor air environment, radon may pose the most substantial public health threat and that research on radon exposure and mitigation should receive priority attention from the EPA and from other members of the interagency Committee on Indoor Air Quality.

V. Committee Views

THE INTERNATIONAL GEOSPHERE/BIOSPHERE PROGRAM

The International Geosphere/Biosphere Program [IGBP] is a proposed program of international research aimed at understanding the Earth as a living planet. More specifically, the program would seek to describe and understand (i) the interactive physical, chemical, and biological processes that regulate the Earth's unique environment for life, (ii) the changes that are occurring in the system, and (iii) how they are influenced by human actions.

This idea surfaced as a U.S. initiative at Unispace '82, was advanced by activities at the National Research Council, and last fall was formally considered by the International Council of Scientific Unions [ICSU]. ICSU subsequently adopted a resolution to investigate the possibility of such a formal international research program and formed an advisory group to make a recommendation for implementation at the next ICSU council meeting in 1986. A U.S. Committee on IGBP has been formed by the National Research Council to develop the U.S. proposal to ICSU.

The Committee believes that this program is very important, particularly because the Earth is undergoing several changes due to activities of man compounded by natural changes. Thus, the Earth could be experiencing a "greenhouse" effect due to increasing carbon dioxide from burning fossil fuels while natural processes such as the El Nino ocean warming and the El Chichon volcano are also affecting the atmosphere. Separation and understanding of these effects is becoming feasible: advances in computer technology for handling data and in Earth-observing satellites now begin to make study of the Earth as a system practical.

The United States' participation in IGBP could involve many agencies including NASA, NOAA, NSF, the Departments of Energy, Agriculture, Interior and Defense, and EPA. A NASA Advisory Committee on Earth System Science recognized that any study of the Earth as a system would involve this large spectrum of agencies, and has been structured to include most of these organizations on the Committee. Therefore, the United States is moving toward developing an appropriately broad science program.

Many EPA programs will be aided by the understanding that will result from IGBP research programs. For example, acid rain depends on the long range transport of pollutants and on atmospheric reactions that take place during the time of transport. An increased understanding of these phenomena will be a byproduct of a better understanding of total atmospheric circulation and chemis-

try. It is important that EPA be involved in the planning of IGP for two reasons: first, to ensure that the results of IGBP will ultimately be valuable for environmental protection, and second, and perhaps more critical, to ensure that the Agency is in a position to absorb, understand and use the research results coming out of IGBP.

The Committee believes that IGBP is very important, and that as it proceeds activities that contribute to understanding how pollutants move and transform in the environment will become an integral component. The Committee encourages EPA to continue its research and development activities related to IGBP and also to support the Earth Systems Science Committee and the National Research Council Committee on IGBP.

VI. Cost and Budget Data

The bill will authorize appropriations in the amount of $324,761,000 for fiscal year 1986.

In accordance with the requirements of Sec. 252(b) of the Legislative Reorganization Act of 1970, the Committee notes that this bill is an authorization bill for one year. If the program authorized under this bill remains substantially unchanged during the next five years and the same level of effort is expended, there will be no change in costs other than those occasioned by inflation or Federal salary increases.

VII. Oversight Findings and Recommendations

Pursuant to Rule XI, Clause 2(l)(3), of the Rules of the House of Representatives, and under the authority of Rule X, Clause 2(b)(1) and Clause 3(f), the results and findings of oversight activities considered by the Committee on Science and Technology have been adopted and are incorporated in the recommendations found in the present bill and report. Briefly stated, the Committee on Science and Technology found the resarch programs of the Environmental Protection Agency to be oriented toward satisfying immediate regulatory needs and inadequate with respect to basic environmental research and on research on emerging environmental problems. The Committee found that this imbalance results in major scientific uncertainty which undermines EPA's ability to make regulatory decisions, to implement effectively the environmental statutes under its jurisdiction, and to respond to emerging environmental problems before they cause significant damage to human health or natural resources. The Committee, therefore, recommended increased attention and resource allocation to basic environmental research and research on emerging environmental problems.

VIII. Congressional Budget Act Information

This bill provides for new authorization rather than new budget authority and consequently the provisions of section 308(a) of the Congressional Budget Act of 1974 are not applicable. No authorization for State or local financial assistance is included in the bill.

IX. Congressional Budget Office Cost Estimate, May 14, 1985

1. Bill number: H.R. 2319.

2. Bill title: Environmental Research, Development, and Demonstration Authorization Act of 1985.

3. Bill status: As ordered reported by the House Committee on Science and Technology, May 7, 1985.

4. Bill purpose: This bill authorizes appropriations of $324.8 million for fiscal year 1986 for the Environmental Protection Agency's research, development, and demonstration activities in ten program areas. These areas are: air quality, water quality, drinking water, solid and hazardous waste (including Superfund), pesticides, radiation, interdisciplinary, toxic substances, energy and program management and support activities. The bill specifies that at least 15 percent of appropriated amounts must be allocated to long-term research. The 1986 authorization for EPA research and development represents an increase of $19 million over the $306 million appropriated for 1985 (including appropriations from the Superfund for research and development) and is equal to the President's 1986 budget request for these accounts.

5. Estimated cost to the Federal Government:

[By fiscal years, in millions of dollars]

	1986	1987	1988	1989	1990
Authorization level	325				
Estimated outlays	144	99	49	22	11

The costs of this bill fall within budget function 300.

Basis of Estimate: The authorization levels are those stated in the bill and are assumed to be appropriated in full prior to the beginning of the fiscal year. Outlays have been estimated on the basis of historical spending patterns for these programs.

6. Estimated cost to State and local governments: None.

7. Estimate comparison: None.

8. Previous CBO estimate: This estimate supersedes CBO's previous estimate for H.R. 2319, prepared on May 8, 1985. It revises the comparison of the authorized amounts with the 1985 appropriation and the President's request to include appropriations from the Superfund for research and development.

9. Estimate pepared by: Deb Reis

10. Estimate approved by: C.G. Nuckols, for James L. Blum, Assistant Director for Budget Analysis.

X. Oversight Findings and Recommendations, Committee on Government Operations

No findings or recommendations on oversight activity pursuant to Rule X, clause 2(b)(2), and Rule XI, clause 2(l)(3)(D), of the Rules of the House of Representatives have been submitted by the Committee on Government Operations for inclusion in this report.

XI. Effect of Legislation on Inflation

In accordance with Rule XI, clause (2)(l)(4) of the Rules of the House of Representatives, this legislation is assessed to have no inflationary effect on prices and costs in the operation of the national economy.

Expenditures by EPA's Office of Research and Development are made in support of basic and applied research conducted in EPA laboratories, by colleges, universities, and private industry under grants and contracts, and by the government agencies through formal interagency agreements.

The research and development program supported by this bill produces the valid scientific information and the most cost-effective technical tools and control systems for our national policy for environmental protection. In the long run, savings will be achieved by providing the most economically feasible techniques in support of such large scale endeavors as the nation's multi-billion-dollar uncontrolled hazardous waste site clean-up efforts.

XII. Changes in Existing Law Made by the Bill, as Reported

In compliance with clause 3 of rule XIII of the Rules of the House of Representatives changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italic, existing law in which no change is proposed is shown in roman):

Section 5 of the Environmental Research, Development, and Demonstration Authorization Act of 1976 (Public Law 94-475)

[Sec. 5. (a) The Administrator of the Environmental Protection Agency shall transmit to the Congress, within 6 months after the date of enactment of this Act, a comprehensive 5-year plan for environmental research, development, and demonstration. This plan shall be appropriately revised annually, and such revisions shall be transmitted to the Congress no later than two weeks after the President submits his annual budget to the Congress in such year.]

Section 4 of the Environmental Research, Development, and Demonstration Authorization Act of 1978 (Public Law 95-155)

[Sec. 4. The Administrator of the Environmental Protection Agency, in each annual revision of the five-year plan transmitted to the Congress under section 5 of Public Law 94-475, shall include budget projections for a "no-growth" budget, for a "moderate-growth" budget, and for a "high-growth" budget. In addition, each such annual revision shall include a detailed explanation of the relationship of each budget projection to the existing laws which authorize the Administration's environmental research, development, and demonstration programs.]

XIII. Committee Recommendations

A quorum being present, the Committee favorably reported the bill H.R. 2319 by voice vote, and recommends its enactment.

○